

Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1. (Currently amended) An X-ray apparatus for inspecting an object, such apparatus comprising:

an X-ray source and X-ray detector disposed on opposing sides of a scanning zone, said X-ray source being disposed in a spaced-apart relationship with respect to the scanning zone;

a first collimator ~~that is in addition to any other collimator that may be integral to the X-ray source,~~ disposed between the X-ray source and the scanning zone and that is being located proximate the X-ray source, wherein the first collimator is in addition to any collimator that is integral to the X-ray source;

a precollimator disposed between the first collimator and the scanning zone, said precollimator being located proximate the scanning zone; and

at least one intermediate collimator disposed between the first collimator and the precollimator, said intermediate collimator having a spaced-apart relationship with respect to the precollimator and the first collimator and being substantially stationary with respect to the precollimator.

2. (Original) The X-ray apparatus as in claim 1 wherein the intermediate collimator further comprises a pair of wings for intercepting backscatter operatively extending from opposing sides of a collimating slot of the intermediate collimator towards the X-ray source.

3. (Previously presented) The X-ray apparatus as in claim 2 wherein the pair of wings further comprises a mounting position that is set back from a center line of a collimating entrance of the intermediate collimator by a distance such that the pair of wings intercept at least a portion of an X-ray beam penumbra from a previous collimator.

4. (Previously presented) The X-ray apparatus as in claim 3 wherein the pair of wings has a thickness that is sufficient to block at least a substantial majority of radiation that is scattered from an intermediate collimator surface that faces the X-ray source.

5. (Currently amended) The X-ray apparatus as in claim 4 2 wherein the intermediate collimator further comprises an overall width that is at least ~~source~~ equal to a collimating entrance of the intermediate collimator, plus twice a setback of the pair of wings, plus twice a thickness of the pair of wings.

6. (Original) The X-ray apparatus as in claim 1 wherein the precollimator further comprises a pair of wings for intercepting backscatter operatively extending from opposing sides of a collimating slot of the precollimator towards the X-ray source.

7. (Previously presented) The X-ray apparatus as in claim 6 wherein the set back of the pair of wings from the centerline of the collimating entrance of the precollimator further comprises a distance between the wings such that the pair of wings at least substantially intercept a penumbra of an X-ray beam from a previous collimator.

8. (Previously presented) The X-ray apparatus as in claim 1 wherein the precollimator further comprises a pair of wings for intercepting backscatter operatively extending from opposing sides of a collimating slot of the precollimator towards the X-ray source and wherein the precollimator has an overall width that is at least equal to a collimating entrance of the precollimator, plus twice a setback of the pair of wings, plus twice a thickness of the pair of wings.

9. (Original) The X-ray apparatus as in claim 1 wherein the detector further comprises a postcollimator that supports a set of detector elements, said postcollimator further comprising a pair of wings for intercepting backscatter operatively extending from opposing sides of a front face of the set of detectors towards the X-ray source.

10. (Currently amended) The X-ray apparatus as in claim ~~3~~ 9 wherein the postcollimator further comprises a pair of wings for intercepting backscatter operatively extending from opposing sides of a collimating slot of the postcollimator towards the X-ray source and wherein the set back of the pair of wings from the centerline of the collimating entrance of the postcollimator further comprises a distance such that the pair of wings at least substantially intercept an X-ray beam penumbra from a previous collimator.

11. (Currently amended) The X-ray apparatus as in claim 1 ~~further comprising~~ wherein the first collimator comprises a source collimator that is disposed adjacent but not integral to the X-ray source.

12. (Original) The X-ray apparatus as in claim 11 wherein the source collimator further comprises a collimating slot with an entrance having a width that is approximately one percent of a distance from a point of origin of X-rays from the X-ray source to the entrance of the source collimator.

13. (Original) The X-ray apparatus as in claim 12 wherein the source collimator further comprises a collimating slot with an exit having a width that is less than one percent of a distance from the point of origin of the X-ray source to the exit of the source collimator.

14. (Original) The X-ray apparatus as in claim 1 wherein the intermediate collimator further comprises a collimating slot with an entrance having a width that is less than one-half percent of a distance from the X-ray source to the entrance of the intermediate collimator.

15. (Previously presented) The X-ray apparatus as in claim 14 wherein the intermediate collimator further comprises the collimating slot with an exit having a width that is about one-third percent of a distance from the X-ray source to the exit of the source collimator.

16. (Original) The X-ray apparatus as in claim 1 wherein the precollimator further comprises a collimating slot with an entrance having a width that is about one-tenth percent of a distance from the X-ray source to the entrance of the precollimator.

17. (Previously presented) The X-ray apparatus as in claim 16 wherein the precollimator further comprises the collimating slot with an exit having a width that is larger than the entrance.

18. (Previously presented) The X-ray apparatus as in claim 1 wherein the precollimator further comprises a collimating slot with an entrance having a width that is about 0.05 percent of a distance from the X-ray source to the entrance of the precollimator.

19. (Previously presented) A method for inspecting an object, such method comprising the steps of:

providing an X-ray source and X-ray detector on opposing sides of a scanning zone, said X-ray source being disposed in a spaced-apart relationship with regard to the scanning zone;

disposing a first collimator proximal to the X-ray source and between the X-ray source and the scanning zone;

disposing a precollimator between the first collimator and the scanning zone, said precollimator being located proximate the scanning zone;

disposing an intermediate collimator between the first collimator and the precollimator, which intermediate collimator is stationary with respect to the first collimator; and

inspecting the object by transmitting an X-ray beam from the X-ray source to the X-ray detector using the first collimator, the intermediate collimator and the precollimator to control expansion and scatter of the X-ray beam.

20. (Previously presented) The method as in claim 19 further comprising providing a pair of wings on opposing sides of a collimator slot of the intermediate collimator to control backscatter.

21. (Previously presented) The method as in claim 19 further comprising providing a pair of wings on opposing sides of a collimator slot of the precollimator to control backscatter.

22 - 24. (Cancelled)

25. (Previously presented) The X-ray apparatus as in claim 1 wherein the first collimator further comprises a collimating slot having an exit having a width that is larger than an entrance to the collimating slot.

Application No. 10/757,779

Amendment dated May 30, 2006

Reply to Office Actions of November 29, 2005 and March 14, 2006

26. (Previously presented) The X-ray apparatus as in claim 1 wherein the intermediate collimator further comprises a collimating slot having an exit having a width that is larger than an entrance to the collimating slot.

27. (Previously presented) The X-ray apparatus as in claim 8 wherein the setback of the pair of wings further comprises a distance between edges of the X-ray beam and the pair of wings to thereby accommodate misalignment of the precollimator.

28. (Previously presented) The X-ray apparatus as in claim 10 wherein the setback of the pair of wings further comprises a distance between edges of the X-ray beam and the pair of wings to thereby accommodate misalignment of the postcollimator.